1. A composite having a controlled rate of dissolution, said composite comprising:

(a) a first region comprising a first composition that comprises calcium sulfate, said first region exhibiting a first rate of dissolution; and

(b) a second region comprising a second composition that comprises calcium sulfate, said second region exhibiting a second rate of dissolution,

said first rate of dissolution being different from said second rate of dissolution.

2. The composite of claim 1, wherein said calcium sulfate of said first composition is selected from the group consisting of alpha-calcium sulfate hemihydrate, beta-calcium sulfate hemihydrate, calcium sulfate dihydrate, or a combination thereof.

3. The composite of claim 2, wherein said calcium sulfate of said second composition is selected from the group consisting of alpha-calcium sulfate hemihydrate, beta-calcium sulfate hemihydrate, calcium sulfate dihydrate, or a combination thereof.

4. The composite of claim 1, wherein said regions are in the form of layers.

5. The composite of claim 1, wherein said first region surrounds said second region.

6. The composite of claim 1, wherein said first composition further comprises a medicament.

7. The composite of claim 6, wherein said second composition further comprises a medicament.

8. The composite of claim 6, wherein the medicament is selected from the group consisting of tetracycline hydrochloride, vancomycin, tobramycin, gentamicin, cephalosporin, cis-platinum, ifosfamide, methotrexate, doxorubicin hydrochloride,

transforming growth factor beta, bone morphogenic protein, demineralized bone matrix, basic fibroblast growth factor, platelet-derived growth factor, polypeptide growth factors, lidocaine hydrochloride, bipivacaine hydrochloride, ketorolac tromethamine, or a combination thereof.

9. The composite of claim 7, wherein the medicament is selected from the group consisting of tetracycline hydrochloride, vancomycin, tobramycin, gentamicin, cephalosporin, cis-platinum, ifosfamide, methotrexate, doxorubicin hydrochloride, transforming growth factor beta, bone morphogenic protein, demineralized bone matrix, basic fibroblast growth factor, platelet-derived growth factor, polypeptide growth factors, lidocaine hydrochloride, bipivacaine hydrochloride, ketorolac tromethamine, or a combination thereof.

10. The composite of claim 1, wherein said first composition comprises calcium sulfate dihydrate prepared from alpha-calcium sulfate hemihydrate.

11. The composite of claim 10, wherein said first composition further comprises a medicament.

12. The composite of claim 11, wherein said second composition comprises calcium sulfate dihydrate prepared from beta-calcium sulfate dihydrate.

13. The composite of claim 12, wherein said second composition further comprises a medicament.

14. The composite of claim 1, wherein said first composition comprises calcium sulfate dihydrate prepared from alpha-calcium sulfate hemihydrate and said second composition comprises calcium sulfate dihydrate prepared from beta-calcium sulfate hemihydrate.

15. The composite of claim 1, wherein said first composition is prepared by contacting with an aqueous liquid an alpha-calcium sulfate hemihydrate having a mean particle size of from about 12 μm to about 23.5 μm.

16. The composite of claim 15, wherein at least 80% of said alpha-calcium sulfate hemihydrate has a particle size of from about 12 μm to about 22 μm.

17. The composite of claim 15, wherein at least 80% of said alpha-calcium sulfate hemihydrate has a particle size of from about 16 μm to about 22 μm.

18. The composite of claim 15, wherein from about 0.1% to about 2.0% of said alpha-calcium sulfate hemihydrate has a particle size of less than about 2 μm.

19. The composite of claim 15, wherein said alpha-calcium sulfate hemihydrate has a purity greater than 98 wt.% calcium sulfate hemihydrate.

20. The composite of claim 15, wherein said alpha-calcium sulfate hemihydrate has a BET surface area of from about 0.2 m^2/g to about 1.0 m^2/g.

21. The composite of claim 15, wherein said alpha-calcium sulfate hemihydrate has a density of from about 2.6 g/cm^3 to about 2.9 g/cm^3.

22. The composite of claim 15, wherein said composite further comprises medicament.

23. The composite of claim 15, wherein said calcium sulfate consists essentially of alpha-calcium sulfate hemihydrate having a purity greater than 98 wt.% calcium sulfate hemihydrate, a BET surface area in the range of from about 0.35 m^2/g to about 0.9 m^2/g, a density in the range of from about 2.73 to about 2.80 g/cm^3, and a mean particle size of from about 16 μm to about 22 μm.

24. The composite of claim 15, wherein from about 90 to about 95 wt.% of the alpha-calcium sulfate hemihydrate has a particle size distribution from about 1 μm to about 45 μm.

25. The composite of claim 1, wherein said first composition is prepared by contacting with an aqueous liquid calcium sulfate consisting essentially of beta-calcium sulfate hemihydrate having a mean particle size in the range of from about 10 μm to about 15 μm.

26. The composite of claim 25, wherein said beta-calcium sulfate hemihydrate has a purity greater than 98 wt.% calcium sulfate hemihydrate.

27. The composite of claim 25, wherein said beta-calcium sulfate hemihydrate has a BET surface area of from about 5 m^2/g to about 6 m^2/g.

28. The composite of claim 25, wherein said beta-calcium sulfate hemihydrate has a density of from about 2.5 g/cm^3 to about 2.6 g/cm^3.

29. The composite of claim 25, wherein said composite further comprises medicament.

30. The composite of claim 25, wherein said beta-calcium sulfate hemihydrate has a BET surface area of from about 4.5 m^2/g to about 7.5 m^2/g.

31. The composite of claim 25, wherein said calcium sulfate consists essentially of beta-calcium sulfate hemihydrate having a purity greater than 98 wt.% calcium sulfate hemihydrate, a BET surface area in the range of from about 4.5 m^2/g to about 7.5 m^2/g, a density in the range of from about 2.5 to about 2.6 g/cm^3, and a mean particle size of about 13 μm to about 14 μm.

32. A method of delivering medicament *in vivo* comprising implanting a composite in a mammal, said composite comprising

(a) a first region comprising a first composition that comprises calcium sulfate, said first region exhibiting a first rate of dissolution,

(b) a second region comprising a second composition that comprises calcium sulfate, said second region exhibiting a second rate of dissolution,

said first rate of dissolution being different from said second rate of dissolution, and

(c) a medicament.